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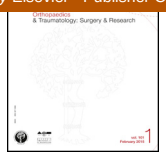

Letter to the editor

Comments on: Prone and direct posterior approach for management of posterior column tibial plateau fractures of K.-C. Lin, Y.-W. Tarng, G.-Y. Lin, S.-W. Yang, C.-J. Hsu, J.-H. Renn published in *Orthop Traumatol Surg Res* 2015;101(4):477–482

We read with great interest the paper entitled "prone and direct posterior approach for management of posterior column tibial plateau fractures" by Lin et al. [1], (*Orthop Traumatol Surg Res* 2015). In recent years, posterior tibial plateau fractures are common injury in China as the widely use of a lower speed scooter in daily life. Posterior column tibial plateau fractures, first proposed by Luo et al. [2], can be further classified as posterolateral or posteromedial isolated pattern (1 quadrant) and posterior bicondylar combined pattern (2 quadrants) [3]. We want to share some surgical tips for the treatment of those kinds of fractures.

First is the patient position. During the operation of posterior shearing fracture of tibial plateau, we would choose a prone position, with the patient's abdomen padded by a foam-rubber cushion. This step could allow the hip and knee joints extend in slightly flexion position, facilitate reduction and fixation of the fragments, as the sight of operators and direction of drills is almost vertical to the operation table. If the patient was laid down horizontally, the lower leg had to be elevated to flex the knee joint, which increase much difficulty for exposure and manipulation.

Second is the skin incision. For isolated posterolateral tibial plateau fractures, a straight 8–10 cm long skin incision was used along the medial border of the fibular head, starting at 2 cm above the popliteal crease in most cases [4]. We do not use reverse L-shaped skin incisions, as horizontal extension of the skin incision does not increase the deep exposure. The posterolateral exposure of the incision was mainly restricted by the lateral head of gastrocnemius (to medial) and the anterior tibial artery (to distal), which perforates through the interosseous membrane at proximal of tibia at a short distance [5]. It is risky to retract the gastrocnemius strongly or prolong the incision for further exposure. As the morphological study had shown the posterolateral fragment was around 3 cm in cortical split length and 10 mm in depression depth, a direct posterolateral approach was enough for exposure and manipulation.

For isolated posteromedial tibial plateau fractures, a traditional posteromedial straight skin incision was used in most cases, and the exposure was not hard.

For both PM and PL combined fractures, which is classified as Schatzker type IV and called posterior bicondylar fractures, we would use a longer posteromedial reverse L-shaped incision approach, with the transverse arm of the incision usually does not cross the central line of popliteal crease. We had designed and used this incision for three main reasons. First, just like the straight posterolateral approach used for PL fracture, horizontal extension of the skin incision only increases limited exposure. Second, longitudinal extension of the incision can facilitate the traction of the medial head, which can increase the intraoperative exposure. Third, the skin incision does not go across the central line of popliteal crease, resulting in less chance of injury to the medial sural cutaneous nerve. However, for some young and strong patients with thick gastrocnemius, it was hard to expose the PL fragment through a posteromedial reverse L-shaped incision approach. It was difficult to retracting the gastrocnemius laterally with risk of injuring the popliteal vessels. We have encountered a case with popliteal vein ruptured caused by violent retraction.

Furthermore, there are still other approaches need to mention. The transfibular approach by Solomon et al. [6] and the extended anterolateral approach by Chen et al. [7] can offer direct surgical exposure and effective fixation for selected posterolateral tibial plateau fractures, according to their reports.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

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